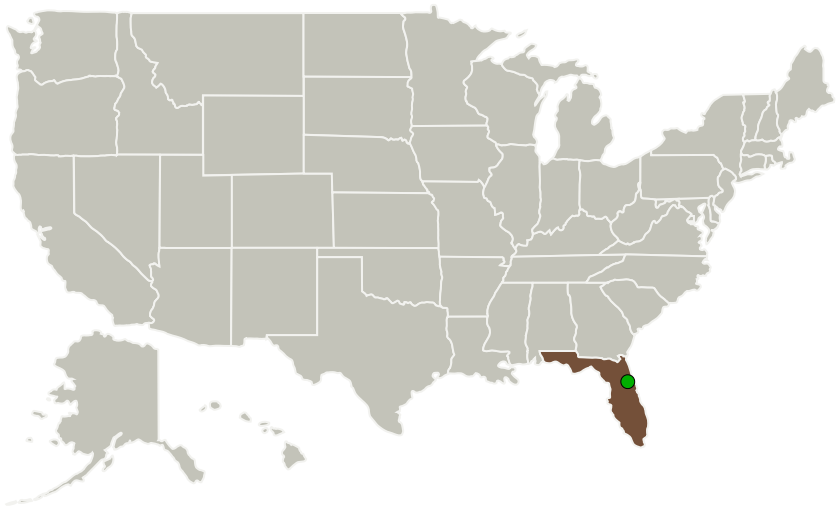
Wireless SAW Sensor Strain Gauge & Integrated Interrogator Design, Phase I

Completed Technology Project (2011 - 2012)

Project Introduction

Wireless, passive, Surface Acoustic Wave (SAW) temperature sensors, which can operate in a multi-sensor environment, have recently been successfully demonstrated. A network of four (4) Orthogonal Frequency Coded (OFC) sensors developed at the University of Central Florida (UCF) has been successfully interrogated wirelessly at a distance of seven (7) feet with a transceiver system developed by Mnemonics, Inc (MNI). A single temperature sensor has been interrogated at a distance of twenty-one (21) feet. This proposal extends that work in two (2) important areas. The first is in the development of an additional sensor type, a strain gauge. The second is in the design of an integrated interrogator system. These will be useful devices for a broad range of NASA, as well as commercial applications.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Mnemonics, Inc.	Lead Organization	Industry	Melbourne, Florida
Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida
University of Central Florida(UCF)	Supporting Organization	Academia	Orlando, Florida

Primary U.S. Work Locations
Florida

Project Transitions

February 2011: Project Start

February 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140246)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Mnemonics, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

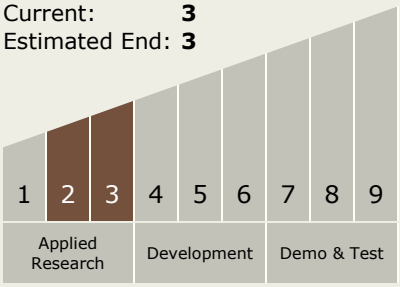
Carlos Torrez

Principal Investigator:

Nikolai Koalovski

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.3 Mechanical Systems
    - TX12.3.4 Reliability, Life Assessment, and Health Monitoring

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System